(1) Dry Ration Distribution (Take Home)

This method has major advantages over cooked food distribution. Dry ration distribution allows families to prepare their food as they wish, permits them to continue to eat together as a unit, and is generally more culturally and socially acceptable.

Distribution is usually made at 7–14 day intervals. Where an accurate census is available and families have food distribution cards, some form of group distribution is possible. A designated family member or group leader becomes responsible for distributing the food. This method is fast and relatively easy to monitor. In the initial stages however, the best way to guarantee a fair distribution may be to have every individual present.

The food distributor is responsible to the people and/or camp authorities. A standard measure (e.g., can) should be used for distribution. Each person should understand how much he/she will receive.

Groups should remain fixed to a piece of ground when they first register to prevent multiple registrations. Simultaneous food distributions will prevent people from moving from one distribution session to the next.

In addition to cooking pots, fuel, and utensils, displaced people must have containers and sacks (e.g., empty cooking oil tins and grain sacks) to protect and store their food rations. Depending on the type of food distributed, there may be a need for grinding and milling facilities.

Food distribution to dispersed populations may present problems. For example, if the displaced camp is located in a food-deficit area, the local population may become intermingled with the displaced population. The local government may try to prevent a census that might cause the local people to be excluded from the food distribution. One solution to overcome this problem is to have the traditional leaders of the displaced population do the distribution. Another solution is to have a separate food distribution system in the local community located away from the displaced settlement. This should keep the local population out of the settlement. While it will cause a certain diversion of commodities, this is an acceptable loss considering the alternatives. Food distributions may also interfere with original planning assumptions. If the affected population is in a village, it may have access to other food sources. Relief managers should take this into account and only provide a portion of their food requirements.

In providing food to dispersed populations, one must be very careful not to destroy local markets and marketing systems. Two methods for food distribution can be used: providing food directly or using the food-for-work or cash-for-work methods.
There can also be village-based or nutrition-based distributions. The village-based method counts the number of people requiring food, determines the amount of food needed, and then gives that amount to everyone. This method is easy but expensive because there is no targeting. There are also problems for the local market, and these programs are difficult to end. Nutrition-based food distribution programs target distribution and then decrease as the area's nutrition level improves. Although this is a good system, it is complicated and staff-intensive. It requires home visits, good records, and nutrition monitoring equipment and trained people to administer the program.

(2) Wet Ration Distribution
This method requires centralized kitchens with adequate utensils, water, fuel (although obviously less than the amounts required for family cooking), and trained, healthy personnel. At least two meals must be provided per day, and the efficient organization of wet ration distribution for large numbers is difficult. Such distribution may be necessary during the initial stages, especially when families have insufficient cooking utensils or fuel.

The quality and quantity of rations should be discussed regularly with the displaced people and complaints should be investigated. It is also important to check that food is being properly distributed and used at the family level. Nutrition education can help with some problems and may prevent improper storage or spoilage. This is especially true if the population is not accustomed to the food. Arrangements should also be made for the inspection of food supplied by contractors.

4. Supplementary Feeding Programs (SFP)

When malnutrition exists or the needs of vulnerable groups of infants, children, pregnant and lactating women, the sick, and the elderly cannot be met from the general ration, special arrangements are required to provide extra food. This is organized through the SFP. The vulnerability of these groups stems from the increased nutrient requirements associated with such factors as growth, the production of breast milk, repair of tissues, and production of antibodies. Because children are unable to eat a large volume of food, it is necessary both to prepare food in a concentrated form, giving them more nutrients in less volume, and to provide more frequent meals. Malnutrition results in lower resistance to infection, which in turn results in further malnutrition.

Small children are particularly susceptible to the cycle of infections and malnutrition. *Sick children must eat and drink,* even if they have no appetite, are vomiting, or have diarrhea. *They must receive additional food whenever possible.* If the percentage of children malnourished is 5–10 percent, a selective SFP should be considered for them and for vulnerable groups. If the percentage of children malnourished is 0–5 percent, a program specifically for the malnourished should be started, but not a general SFP.

An SFP requires strong advocacy among the population. Its purpose must be clearly understood, otherwise some will question why the weak and sick are being fed when there are children who are healthy and need food.

Factors to consider when determining the need for an SFP include:

- General ration averages less than 1500 Kcal/person/day.
- 10–20 percent of the children are malnourished (children under 5 years old under 80 percent weight-for-height).
- Severe public health hazards exist.
- Significant diseases, especially measles, are prevalent or imminent.

The aim of an SFP is to provide extra high energy, high protein, low bulk extra meals once or twice a day to those who need it. The number of meals depends on the nutritional status of the population, the nutritional value of the general ration, and the age of the beneficiaries. The size of the supplement also depends on the nutritional status of the beneficiaries. However, at least 350 Kcal and 15 g protein per day should be provided.

Supplementary meals should be prepared as porridge or soup, which are easily digestible and can be eaten by people of all ages. The food is generally based on cereal and legume blends with edible oil added to increase the energy content. Other ingredients (e.g., sugar, vegetables, fish, milk) can be added to provide additional nutrients and a variety of flavor. There are some prepacked cereal/legume blended meals available through U.N. agencies (e.g., *CSM (corn-soya-milk), WSB (wheat-soya-blend)*, etc.) that may be useful at the start of an emergency feeding program if ingredients are familiar to the population However, local foods should be substituted as quickly as possible and prepared in a more traditional and appropriate way.

SFP's must be based on the active identification and followup of those considered vulnerable. This requires a regular house-by-house or family-by-family assessment, usually made by public health workers operating through a referral system. In addition to encouraging those in need to participate in the SFP and ascertaining the reasons for non-participation, continued home-visiting is required to monitor the progress of infants and children. Those identified for the program should be registered and issued a numbered identity bracelet or card to facilitate followup. An SFP that does not actively identify those in need, but operates on an open "come-if-you-wish" basis, is unlikely to benefit those in greatest need and is a very poor use of food and organizational resources.

The criteria for admission to an SFP will depend on the condition of displaced people and resources available. The SFP order of priority is:

- any malnourished person (less than 80 percent weight-for-height WHO International Reference or a Z-Score of less than -2).
- young children (less than 5 years old or 115 cm in height).
- women during the last 3 months of pregnancy and the first 12 months of lactation.
- medical referrals and the socially vulnerable.

Should restrictive selection be necessary due to a lack of resources, the nature of the program will change from preventive to curative.

Children should not be discharged from the SFP until they have maintained more than 85 percent weight-for-height for at least 1 month.

Once begun, SFP's must be considered necessary until an appropriate general ration is provided that meets the needs of the vulnerable and as long as living conditions remain hazardous. *SFP's should not be discontinued unless surveillance results reflect sustained improvement and less than 5 percent of the children remain malnourished.* As children improve, they should be excluded from the program. Otherwise, the SFP becomes too large and unmanageable, and parents may regard the SFP as a routine, not specially targeted, program.

The amount of food required for supplementary feeding is approximately 3 metric tons per 1,000 beneficiaries per month. This is illustrated in the chart below.

SUPPLEMENTARY FOOD QUANTITIES
Typical Daily Ration

Item	Amount (gm)	Energy (kcal)	Protein (gm)	Monthly Amount*
Cereal	60	210	6	1.8
Oil	10	90	–	0.3
DSM**	25	90	9	0.75
Sugar	5	20	–	0.15
Total	**100**	**410**	**15**	**3.0**

* Monthly amount for 10,000 in metric tons (Daily x 30 x 1,000).
Dried skim milk (See point 6: **Infant Feeding and Milk Products).

An effective SFP program requires the regular attendance of all those registered. The identification of those in need is a prerequisite, to be followed by careful control of attendance and progress. Trained staff should weigh and measure children on admission to the SFP and reweigh them monthly to monitor individual progress.

The SFP can be organized using either the "take home" or "on-the-spot" method. Both require careful registration and control. The take home system is relatively simple to administer, but the food supplement is likely to be shared within the family. On-the-spot feeding is the preferred method. Supervision is improved and the intended beneficiary is witnessed eating the correct amount of food. Also followup is easier, as those in need are seen more often and under more controlled conditions.

Any SFP must be closely integrated with a community health care program, since the SFP will identify health problems. Certain daily medications (e.g., iron, folate), may best be given in the course of the supplementary feeding.

Feeding centers and kitchens must be well organized and kept clean. Long waiting periods must be avoided and the schedule must not clash with family meal times or other essential community activities. Mothers may have to be fed with children to ensure that vulnerable children receive special feeding. *Parents must be*

made to understand that the SFP is given in addition to the normal meal. Otherwise parents will think that young children are fed at the center while older children must eat at home. Utensils, bowls, scales, fuel, water, storage facilities, and other equipment will be required and can generally be obtained locally. Some of these supplies are available with an *OXFAM Feeding Kit,* which includes 300 plastic plates, 300 plastic cups, 2 jerry cans, 4 buckets with lids, 50 spoons, 2 can openers, 1 large pot, 1 small pot, 2 ladles, 2 mixers, and a guide book. The kit does not contain a cooker.

One SFP center can usually handle up to 500 beneficiaries. The centers should be run by trained displaced people. An experienced nurse should be able to supervise four to five centers If different organizations establish separate SFP centers, central coordination and standardized procedures for all centers are very important. Programs must avoid depending on outside assistance to prevent their collapse when individuals or organizations leave.

5. Therapeutic Feeding Programs (TFP)

Therapeutic feeding reduces deaths among infants and young children with severe protein-energy malnutrition (PEM). (The forms of PEM are described at the end of the food and nutrition section). If severe PEM exists, therapeutic feeding will be the priority method to save lives. However, if the startup of an SFP is delayed because resources, particularly trained personnel, are concentrated on a TFP, there may be a sudden deterioration in other less-malnourished children. The life-saving achievements of a TFP will be overtaken by the life-threatening consequences of not having an adequately functioning SFP benefiting more people.

Food is the treatment for PEM. Unlike SFP's, TFP's are used solely for curative measures and should only be administered as short-term programs. The need for its continuation will depend on the effectiveness of general and supplementary feeding programs as well as the nutritional conditions of new arrivals.

The usual criteria for admission to a TFP is if an individual suffers from edema (kwashiorkor), or severe marasmus (weight-for-height less than 70 percent or a Z-Score of less than -3). Patients should remain on a TFP until they are free from illness, at least 80 percent of weight-for-height, and without edema. Only upon recovery would patients be discharged to the SFP.

Therapeutic feeding should take place on an in-patient basis whenever possible, as food must be given every 3–4 hours. Infection and dehydration are the major causes of death. Patients must be closely watched for medical complications. If weight does not increase quickly on a properly run TFP, it is likely that the individual also has an illness which must be treated. *The immunization of children against measles is a priority due to the high mortality associated with this disease in a malnourished population.* All children admitted to a TFP should be given a full course of Vitamin A, with doses on days 1, 2, and 7 of admission.

TFP's must be run by experienced and qualified personnel. One center can usually handle about 50 children and will require two experienced supervisors working full-time. Doctors and nurses with little training in nutrition or experience in treating severe PEM must be given necessary guidance. Displaced people and mothers of patients, in particular, should be involved in running the therapeutic feeding center.

TFP for PEM consists of a diet of at least 150 Kcal and 3–4 g of protein per kilo body weight per day for each patient. This is administered during 5–7 meals at 3–4 hour intervals throughout a 24 hour period. Boiled water mixed with a dried skimmed milk/oil/sugar mixture, or with a UNICEF K Mix II/oil mixture, can be used to initiate treatment. A mixed diet is introduced once the patient's condition starts to improve (usually after 4–5 days).

6. Infant Feeding and Milk Products

Human milk is the best and safest food for infants and children under 2 years of age. Breast feeding also provides a secure and hygienic source of food, as well as antibodies that protect against some infectious diseases. *Therefore, every effort must be made to promote lactation, even among sick and malnourished mothers.* In some cases, mothers may need to receive extra food to encourage breast-feeding and provide the additional calories and nutrients required. This should be done through the SFP.

Problems associated with using infant formula and feeding bottles are exacerbated in a displaced population situation. Clean, boiled water is essential but rarely available to dilute the formula. Careful dilution of the formulas is also difficult to control as mothers are unlikely to be familiar with the use of infant formula and instructions are often in a foreign language Infant formula, if unavoidable, should be distributed from health or feeding centers under strictly controlled conditions and proper supervision. *Infant feeding bottles must never be distributed or used*; they are almost

impossible to sterilize and to keep sterile under such conditions. *Babies should be fed by a clean cup and spoon if necessary.*

Milk should not be distributed if it is not a traditional part of the displaced people's diet. Some populations may even have a lactose (milk sugar) intolerance.

The use of dried milk powder also has major practical problems. Both hygiene and proper dilution is difficult to ensure. Also, powdered milk mixed with unsafe water or exposed to dust or flies can easily become contaminated and provide an ideal environment for bacterial growth. For these reasons *milk should not form part of the general ration*, unless milk was used as a normal source of protein for the displaced population.

In addition to infant formula, products commonly offered in emergencies include dried whole milk (DWM), dried skimmed milk (DSM), sweetened and unsweetened condensed milk, and evaporated milk. Their appropriateness must be ascertained before acceptance. *It should be noted that all DSM supplied from U.S. sources is vitamin A fortified, however, the vitamin A in any DSM, has a shelf life of 6 months.*

Milk products are useful in SFP's and TFP's when administered under supervision and controlled and hygienic conditions. For example, milk can be added to SFP cereal mixtures to boost their protein content. Milk powder is the usual basis for early stages of treatment in therapeutic feeding.

7. Basic Facts About Food and Nutrition

a. Nutrients

Foods are made up of *five basic types of nutrients:* carbohydrates, fats, proteins, vitamins, and minerals. *Carbohydrates* are a source of energy and consist mostly of starches and sugars of vegetable origin, such as cereals and tubers. *Fats and oils* provide the most concentrated source of energy, having more than twice the energy content per weight of carbohydrates and proteins. In most poor countries, most energy is derived from staple foods, especially cereals, with fats accounting for a much smaller portion. *Proteins* are body-building substances required for growth and tissue repair. Protein is found in foods of animal origin, cereals, and legumes. *Vitamins and minerals* are needed in small quantities for the adequate functioning of the body. Individual vitamins and minerals, or combinations are found in all foods in variable amounts.

b. Energy and Protein Intakes

If the energy intake is inadequate, some protein in the body will burn to provide energy instead of promoting body growth or repair. That is, it will be used in the same way as carbohydrates or fats. No less than 10 percent of the energy requirement should be supplied from fats and oils, even though they greatly enhance the palatability of the diet and increase energy density, which is important for younger children. Energy requirements vary widely, even among normal individuals, and increase with physical activity. *Much higher intakes are required for the treatment of malnutrition*, when the aim is rehabilitation rather than maintenance. (*A chart listing approximate nutritional values of various commodities is located in table 7 at the end of this chapter.*)

c. Food and Diets

Diets in most countries contain adequate amounts of nutrients required for good health *if enough of the diet is taken to satisfy the individual's energy requirements.* Even a growing, healthy child requires no more than 10 percent of the calories to be supplied from protein sources.

(1) Protein-Energy Malnutrition (PEM)

PEM is a problem in many developing countries, even under normal conditions. In most cases, PEM affects children between the ages of 6 months and 5 years (especially at the time of weaning). Severe PEM is usually precipitated by low food intake associated with infection. Displaced people are particularly vulnerable to PEM. *PEM has three forms which are described below.*

Nutritional Marasmus is the most frequent form of PEM in cases of prolonged food shortage. The main sign is a severe wasting away of fat and muscle that have been expended to provide energy. Affected children become very thin, may have an "old man or old woman" face, and loose folds of skin. However, they may appear relatively active and alert.

Kwashiorkor is seen most commonly in areas where the staple food is mainly carbohydrate, such as tubers and roots like cassava. It is precipitated, however, by many factors other than protein deficiency. The main sign of kwashiorkor is edema, a swelling that usually starts at the lower extremities and extends in more advanced cases to the arms and face. Edema must be present for the diagnosis of kwashiorkor but can also occur in other diseases. Where there is gross edema, the child may look

"fat" and be regarded by the parents as well-fed. Associated signs of kwashiorkor, which do not always occur, include hair changes (color becomes lighter, curly hair becomes straight, comes out easily with a gentle pull) and skin changes (dark skin may become lighter in places, skin may peel off, especially on the legs, and ulcerations may occur). Children with kwashiorkor are usually apathetic, miserable, withdrawn, and often refuse to eat. Profound anemia is a common complication of kwashiorkor.

Marasmic Kwashiorkor is a mixed form of PEM, with edema occurring in children who are marasmic, and may or may not have other associated signs of kwashiorkor. Mixed forms will often be seen.

8. Rapid Assessment of the Nutritional Status of Young Children Using the Mid-Upper-Arm Circumference (MUAC) Method

a. Explanation

The MUAC technique is used to rapidly assess the nutritional status of young children. It measures the part of the arm whose circumference does not normally change significantly between the ages of 1 and 5, but which wastes rapidly with malnutrition. The technique is not suitable for monitoring the progress of individual children.

Professional help should be used for the arm circumference method. If professional help is unavailable, assessments can be done by those without previous experience by using the guidelines below.

b. Selection of the Children

If the displaced person population is 10,000 or less, a random sample of no less than 200 children aged between 1 and 5 years should be selected. This can be done on a house-to-house basis or by assembling all the children at one camp and then measuring every fifth child. If a "cluster" sample method is used (i.e., sampling different sections of a large settlement), no less than 30 children per cluster should be measured to allow a comparison between sections. Take care that adults do not produce sick children in the belief that the test is to be followed by medical attention, as this will distort the result. A quick but crude way of ascertaining that children selected range between 1 and 5 years, is to verify that they have more than six teeth but stand less than 115 cm in height. For most people, this would mean the children come up to about waist height.

The assessment must be put in context, as the condition of this particular group may not reflect that of the whole caseload. It is important, therefore, that information be reported about where the children come from and when they arrived.

c. The Measurement

Before being measured, the child should be checked for edema, the swelling associated with kwashiorkor. This is done by pressing a finger against the front of the child's foot for about 3 seconds. A dent, (pitting) indicates that the child has edema, and therefore should not be measured. It should be recorded that the child has edema and is severely malnourished.

If there is no sign of edema, the mid-upper-arm circumference of the child should be measured, using a custom-made measuring tape. The tape should be wrapped closely, but *not* tightly, around the arm, midway between the elbow and the point of the shoulder. The arm should be hanging loosely, with the tape measure circled around the arm. The tip should be inserted back-to-front through the narrow slit at the white end of the tape. The arm circumference should be read to the nearest 0.1cm between the vertical arrows at the center of the large opening. The arm circumference of normal children between 1 and 5 years of age changes very little. Therefore, children of these ages can be included in a nutrition survey using the same standards.

The arm circumference tapes have colored bands representing different nutritional states:

Status	Arm Circumference	Color
Normal	13.5cm or greater	Green
Mild Malnutrition	12 5 to 13.4cm	Yellow
Moderate to Severe Malnutrition	Less than 12.5cm	Red

If custom-made measuring tapes are not available, a thin strip of plastic (about 30 cm in length) should be used with marks clearly indicated at the zero point, 12.0 cm, 12.5 cm, and 13.5 cm.

d. The Results

Each arm circumference has an approximate equivalent to a weight-for-height percentage. They are:

13 5 cm or greater approximately equivalent to over 85 percent weight-for-height.

12.5 to 13.4 cm approximately equivalent to 80–85 percent weight-for-height.

Less than 12.5 cm approximately equivalent to under 80 percent weight-for-height.

The amount and degree of malnutrition can be calculated as percentages of the sample Also reported is the percentage of children with edema (kwashiorkor).

E. Health

1. General

Health services provided to displaced people should be based on the concept of primary health care. This strategy strongly emphasizes preventative rather than curative care, since curative care places a much heavier burden on response resources. The majority of the population is generally more influenced by public health measures than by individual care.

The exception to the rule of emphasizing preventative care over curative care occurs in sudden onset disasters, such as earthquakes or during civil strife disasters, where there can be initially, a significant need for trauma care within the population. Positions are identified within the DART and can be filled as needed to deal with trauma care situations.

The level of health care provided will be determined by the condition of the displaced people and resources available. In theory, the peak of curative medical care should be during the early stage. This is when displaced people are most vulnerable to their new environment and before it has been possible to complete any major public health improvements in the sectors of shelter, water supply, and sanitation. In practice, however, the medical staff often arrive later and begin to build up curative services at the same time that the overall health status of the displaced people is improving, if the emphasis is placed instead on preventive care. Once immediate health problems are controlled, the level of health care provided should be appropriate for the local population and at a level that can be maintained. Services and levels of care available to the displaced people should be standardized.

2. Initial Health Assessment and Mortality Rates

The aim of the initial health assessment is to identify mortality rates, morbidity rates, and health needs and to establish response and recommendations and priorities.

a. Mortality Rate

The *mortality rate* (death rate) is the single most important indicator of serious stress (e.g., illness, malnutrition) in a displaced person population. Knowing the causes of death is crucial since it helps set priorities for appropriate relief interventions. In addition, deaths are indicators/events of obvious interest and concern to the displaced population, relief administrators, and the media.

In displaced populations served by well-run relief efforts, overall *mortality rates should not exceed 1.5 times those of the host population.* An elevated mortality rate signals an ongoing problem and should prompt an immediate investigation of the situation. In general, even initially high mortality rates should fall to or below 1 per 10,000 per day within 4–6 weeks of beginning a basic support program that provides sufficient food, water, immunization, simple health care, and other immediate needs. Rates above that level should be a cause for concern. *Mortality rates exceeding 2.0 per 10,000 population per day indicate a serious situation.* Immediate actions should be taken.

Because the number of deaths fluctuates from day to day, death rates should be calculated over an extended period, ranging from 1 week to a month. For example, take the number of deaths occurring each day over a 7-day period and average the total; the resulting average daily number is used in analyses Since it may be difficult to determine the total population, a sample size of 20–30 families is recommended. Surveys of death rates should be conducted on a regular basis. *Remember, in an emergency the critical task is to get the death rate down. It is also the measure by which the effort will be judged!*

Procedures for calculating mortality rates

$$\text{Mortality Rate} = \frac{\text{Number of deaths} \times 10.000}{\text{Number of days} \times \text{population}} = \text{Deaths/10,000/day.}$$

Example: If 21 deaths have occurred over a 7-day period in a displaced population of 5,000 people, the death rate would be calculated as follows:

$$\text{Death Rate} = \frac{21 \times 10{,}000}{7 \times 5{,}000} = \frac{210{,}000}{35{,}000} = 6$$

which is expressed as 6.0 deaths per 10,000.

To convert to the number of deaths per 1,000, which is the preferred method of some public health personnel and epidemiologists, divide the rate above by 10. For example, 6 divided by 10 equals 0.6 deaths per 1,000 per day.

b. Health Assessment

Factors contributing to health or disease in the displaced population must be determined by establishing the pattern of disease, the effect of cultural and social influences on the population's health, and the effectiveness of any existing health services.

The key to an effective assessment and surveillance program is good information. Information can be collected by observation or from health workers. Sample surveys reveal symptoms and disease patterns and indicate distribution in the community. When possible, mass screening on arrival is the most effective method, and can sometimes be conducted at a camp during the registration process.

The initial assessment should be done by field experienced persons who have an understanding of epidemiology. If OFDA takes on this responsibility, it normally requests these services from the Centers for Disease Control in Atlanta.

A centrally coordinated surveillance system must be established quickly to identify problems in time for preventative action. For example, the incidence of diarrheal diseases may be an important indicator of environmental problems.

Records on individuals and on the community as a whole serve important purposes. Individual record cards are used for recording immunizations and the treatment of illnesses. These cards should be kept by the displaced person, and in the case of young children, by the mother. Experience shows that these cards are generally well-cared for by their owners.

Community reporting has a different purpose. It is an essential tool for the planning of services and monitoring of disease patterns. National health authorities may also require specified "notifiable" communicable diseases to be reported at once.

To be fully effective, surveillance requires rapid access to laboratory services. Very simple lab services at the camp level are usually adequate.

3. Disease Control

The risks of communicable (infectious) diseases are increased by overcrowding, poor environmental conditions, and the often poor initial state of health of the population. The infectious organism, however, must first be present to spread. For example, if no one is carrying typhoid, it will not suddenly appear.

Measures to improve environmental health conditions are, therefore, very important. These measures include providing enough safe water, soap, proper disposal of excreta and garbage, controlling rodents and vectors, and educating the population on general public health issues.

a. Immunizations

*The **only** immunization required during the early weeks of an emergency is for young children against measles. This is a high priority even when resources are scarce.* All other necessary immunizations (e.g., diphtheria-tetanus-pertussis (DTP), polio, and BCG (tuberculosis)) should be given later, once facilities allow, and to the extent possible within the framework of the government's own expanded program of immunization (EPI).

In displaced person situations, rumors of epidemics in camps often are rampant Rumors should be confirmed by responsible experts, and information disseminated to the displaced population.

Infections that cause much disease and death in displaced person camps are often aggravated by malnutrition. These infections cannot be effectively prevented by mass immunization programs, and the programs are labor intensive and require controlled handling and careful supervision.

The chart below illustrates immunizable diseases that might be present during a displaced person emergency situation, the relative value of an immunization program for each disease, and the age group target for each type of immunization program

It should be remembered that vaccines *prevent* diseases; they do not cure them. Therefore, these diseases must be anticipated and detected early

Disease	Name of Vaccine	Usual Utility for Displaced Persons	Appropriate Ages
Measles	Same	++++	Under 5 yrs
Polio	Same	+++	Under 5 yrs
Diphtheria	DTP	++	Under 5 yrs
Pertussis	DTP	++	Under 5 yrs
Tetanus	DTP	++	Under 5 yrs
Tuberculosis	BCG	+	Under 1 month
Cholera	Same	0	
Typhoid	Same	0	
Meningococcal Disease	Same	Use only in outbreaks	

b. Common Diseases

The most common symptoms and diseases among displaced people are those normally to be expected in any community in a developing country: diarrhea, measles, nutritional deficiencies, respiratory infections, malaria, parasites, and anemia. However, crowded conditions among the displaced people are likely to increase the occurrence of these diseases, in particular diarrhea. Diarrhea, due to the new environment, overcrowding, and poor environmental services, usually poses the major threat to displaced people's health in the first weeks of living in a camp. It remains a major health risk should there be a sudden deterioration in some aspect of the communal services, such as contamination of the water supply.

The following provides information on diseases common to displaced person emergency situations. It includes information on the symptoms, transmission, and possible curative and/or preventative measures that can be introduced for these diseases.

An important point to note is that among the diseases listed, 80–90 percent of all deaths in displaced populations are caused by five killer conditions: malnutrition, measles, acute respiratory infections, diarrheal diseases, and malaria.

Acute Respiratory Infections (ARI)

ARI's are caused by a variety of viruses and bacteria. They are marked by cough, fever, and shortness of breath. They may be

mild or may progress rapidly to death, especially among malnourished children. ARI's are favored by cold rain, inadequate blankets and clothing, poor ventilation, and crowding. The best preventive strategy is to provide adequate space, shelter, clothing, blankets, and ventilation. For severe cases, the treatment is antibiotics.

Cholera

Cholera is an acute intestinal disease characterized by sudden onset of profuse watery stools with occasional vomiting. In some cases, diarrhea can be so severe that it can lead to dehydration and even death. Many infected individuals, however, have mild diarrhea or even no symptoms at all. The recommended treatment is rehydration with appropriate electrolyte solutions, by mouth if possible.

Transmission occurs through ingestion of water contaminated with feces. To a lesser extent, food contaminated by water, soiled hands, and even flies can spread the disease. Person-to-person spread generally does not occur.

The incubation period for cholera is usually 2–3 days, but can be from a few hours to as long as 5 days.

Patients generally carry the cholera bacteria in their stools only while they are having diarrhea and for a few days after recovery. Although long-term carrier states have been described, incidence is quite rare.

A cholera vaccine is available but current vaccines provide protection in only about 50 percent of vaccinees and protection lasts only a few months. Also, initial immunization requires two doses of vaccine given 4 weeks apart, which precludes its use during outbreak situations.

If cholera is suspected, the following measures should be taken

1. Report suspected cases to national public health authorities.
2. Confirm the diagnosis by culturing stool samples from suspected cases. Regional public health laboratories or a hospital lab in the capital city should be able to help confirm this diagnosis by testing the samples.
3. Check the hygiene loop to be sure water is safe and is protected from sewage contamination (the source of the infection in most cases)
4. *Vaccine does not prevent the spread of the cholera organism!*

Diarrheal Diseases

Diarrheal diseases are the most common fatal childhood diseases worldwide. *Malnourished individuals are particularly prone to diarrhea. Complications among young children can result in dehydration and shock. If untreated, it is frequently fatal in already malnourished children.* Diarrhea is transmitted through contaminated food and water. There are several diseases that manifest as diarrhea, e.g., dysentery (viral, bacterial, and amebic), shigella, and giardia.

Antibiotics rarely affect the course of childhood diarrheal illnesses. Diarrheal diseases generally are self-limited and, if fluids and electrolytes (water, salt, bicarbonate, potassium, etc.) can be replaced by mouth, the illness will run its course and the patient will survive. While packets containing the proper mixture of electrolytes (*oral rehydration salts, (ORS)*) are available, homemade fluids containing the most important minerals can easily be produced (see "3" below).

If diarrhea other than cholera or typhoid is suspected to be a major problem, the following measures should be taken:

1. Confirm prevalence of problem by reviewing morbidity and mortality data. Additional information, such as location of patients in the camp, the length of time in the camp, and the source of family water supplies, can help pinpoint the source of infection.
2. Check the adequacy and purity of water supply to determine if there is any actual or potential contamination of water supplies by human feces.
3. Stress importance of oral rehydration therapy. If packets containing the proper mixture of electrolytes are not available, the most suitable fluid is a sugar-salt solution containing the following ingredients in 1 liter of water:
   (a) Sodium chloride (table salt) 3.5 grams
   (b) Sodium bicarbonate (baking soda) 2.5 grams
   (c) Potassium chloride 1.5 grams
   (d) Glucose (sugar) 20.0 grams
4. Intravenous fluids are rarely preferable to oral rehydration.

Diphtheria (D), Tetanus (T), Whooping Cough (P=pertussis)

Diphtheria is generally not a problem in tropical countries. It is usually characterized by a patch or patches of a grayish membrane in the throat.

Tetanus is a severe infection characterized by painful muscular contractions especially of the jaw and neck muscles. In developing countries, this disease is almost always fatal.

Tetanus is transmitted through spores introduced into the body during injury, usually a puncture wound contaminated with soil or feces, but also through burns and trivial wounds. Neonatal (infant) tetanus continues to occur in large numbers in developing countries because of unsterile cutting of the umbilical cord or ritualistic covering of the cord stump with unsterile items (e.g., cow dung). *Tetanus can not be transmitted person-to-person.*

The incubation period is about 10 days for tetanus.

Whooping Cough (pertussis) is a bacterial disease common in children throughout the world. It begins with a runny nose and an irritating cough. The cough gradually becomes worse over 1–2 weeks and lasts for 1–2 months. Whooping cough can be a severe disease and fatal, especially in non-immunized malnourished children less than 1 year of age.

Diphtheria and whooping cough are transmitted through the air from respiratory secretions of infected patients.

The incubation period for both can last from 7–10 days.

The period of communicability is the first 3 weeks of illness.

DTP (diphtheria-tetanus-pertussis) vaccine is available and highly protective against these three diseases. The vaccine must be given in three separate injections at least 4 weeks apart. Vaccine can be given as early as 1–2 months of age. DTP vaccinations can be delayed until after the emergency phase of a displaced person operation. An essential part of a tetanus vaccination program is administering two doses of tetanus toxoid vaccine to women in their last 4 months of pregnancy (who should receive two doses 4–6 weeks apart).

There is a high incidence of minor reactions to the DTP vaccine, especially to the pertussis component. These reactions, which are generally of short duration and not serious, include fever, muscle aches, irritability, and aching at the site of injection.

Intestinal Parasites

Intestinal parasites are extremely common in developing countries. A majority of the population can be infected with one or

more parasites, of which the most common are usually hookworm, Ascaris, giardia, and Trichuris (whipworm). Many of those infected will appear perfectly healthy, but fever, anemia, abdominal pain, vomiting, and exacerbation of malnutrition can occur with heavy infestations. These parasites are usually transmitted when walking barefoot step on soil contaminated by feces Intestinal parasites are not spread from person-to-person.

Intestinal parasitic infections should assume a *very low priority* in the emergency phase of a displaced persons operation Because re-infestation after treatment is an indicator of poor sanitation, correction of sanitary deficiencies is likely to abate the parasite problem and other more serious diseases

If parasites are a problem, the following measures should be taken:

1. If a laboratory is available, survey children to determine the prevalence of infection and the type of parasite involved.
2. Once several malnourished children begin to recover, treat them for possible worm infestation.
3. Check for adequate facilities for the proper disposal of feces immediately adjacent to shelters or houses, particularly in children's play areas.
4. Promote health education, and encourage displaced people to use latrine facilities.
5. Longer-term parasite control efforts must include health education and the wearing of shoes or sandals. Control programs based on drugs alone do not work.

Leprosy

Leprosy is a chronic infectious disease characterized by progressive deterioration of skin and occasionally other tissues. Despite adequate treatment that is now available, leprosy still carries serious social stigma in many cultures. Leprosy primarily occurs in tropical regions and in the lowest socioeconomic groups. The incubation period for leprosy is 1–20 years, but 90–95 percent of those "infected" never develop any manifestations of the disease.

In most displaced person camps in developing countries, a few cases of leprosy may be encountered. Identified cases should be treated. However, since *leprosy is a chronic disease and is not very contagious*, low priority should be given to identifying new cases and establishing a control program, especially in the early phases of an emergency. But because of the social stigma attached to the disease, efforts may be needed to calm the fears of other displaced people and workers in the camp.

Malaria

During the last decade, malaria has had an upsurge in many developing countries. This is due to the decreased number of mosquito control programs and an increased resistance of the malaria parasite to the usual treatment. There are four types of malaria, but *vivax* and *falciparum* are the most common. Vivax is generally not a life-threatening disease, but falciparum can be rapidly fatal and requires prompt treatment. The usual symptoms of malaria are fever, chills, headache, and sweats that can progress to kidney and liver failure, shock, and even coma. In an area known to have falciparum malaria, fever, and delirium, disorientation or coma should be assumed to be malaria and treated promptly.

Those who have already been exposed to malaria have some immunity to the disease and may either remain without symptoms or have a mild attack if re-exposed to malaria. The major threat to health arises in non-immune populations who may be forced to flee from a setting where malaria is not a problem (especially urban areas), to jungle, swamps, or other areas where malaria transmission is occurring and where they can contract the disease.

If malaria is suspected, the following measures should be taken:

1. **Attempt to confirm the diagnosis**. Blood smears on suspect cases should be taken. They are simple to do and, if a microscope is available, local medical technicians can confirm the diagnosis. If laboratory confirmation is not available, *assume that recurrent fever, chills, and headache in a malaria area is malaria* until proven otherwise.
2. **Assess the risk of disease**. Ask if the displaced people originally lived in an area where malaria was a problem. They will most likely know whether malaria was present in their homeland. If so, they probably developed some immunity, and malaria will not likely be a major problem, except among young children If they did not come from an area with malaria, it is very important to check whether malaria existed along the route by which they came to the camp or in the camp area itself. Local health authorities will probably have information about the existence of malaria in the camp area and whether it is the more serious (falciparum) or less serious (vivax) form.